

CLAIMS

1. A gas-barrier multilayer hollow container having a co-stretched multilayer wall structure including a layer of a polyglycolic acid resin comprising at least 60 wt.% of recurring unit represented by a formula of $-(O\cdot CH_2\cdot CO)-\cdots(1)$, and a layer of co-laminated resin comprising an aromatic polyester resin or an aliphatic polyester resin other than polyglycolic acid resin laminated on at least one surface of the polyglycolic acid resin layer, and satisfying a formula of:
10 $T \times w/v \leq 0.8 \times 10^{-3}\cdots(2)$, wherein T represents an oxygen gas permeability (ml/container/day/atm), v represents a volume (ml) of the container, and w represents a content (wt.%) of the polyglycolic acid resin with respect to a whole weight of the container.
- 15 2. A multilayer hollow container according to Claim 1, wherein the co-laminated resin has a glass transition temperature of at most 70 °C.
3. A gas-barrier multilayer hollow container having a co-stretched multilayer wall structure including a layer of a polyglycolic acid resin comprising at least 60 wt.% of recurring unit represented by a formula of $-(O\cdot CH_2\cdot CO)-\cdots(1)$, and a layer of co-laminated resin comprising an aromatic polyester resin or an aliphatic polyester resin other than polyglycolic acid resin laminated on at least one surface of the polyglycolic acid resin layer, and satisfying a formula of:
20 $T \times w/v \leq 0.8 \times 10^{-3}\cdots(2)$, wherein T represents an oxygen gas permeability (ml/container/day/atm), v represents a volume (ml) of the container of at most 700 ml, and w represents a content (wt.%) of the

polyglycolic acid resin of 1 - 10 wt.% with respect to a whole weight of the container.

4. A multilayer hollow container according to any of Claims 1 - 3,
5 comprising a laminate of the polyglycolic acid resin and an aromatic polyester resin.
5. A multilayer hollow container according to any one of Claims 1 - 3,
layers of one or both of the aromatic and the aliphatic polyester resin
10 are laminated on both surfaces of and co-stretched with the polyglycolic acid resin layer.
6. A multilayer hollow container according to Claim 5, wherein layers
of the aromatic polyester resin are laminated on both surfaces of the
15 polyglycolic acid resin layer.
7. A multilayer hollow container according to any one of Claims 4 - 6,
wherein the co-laminated resin comprises a recycled resin.
- 20 8. A multilayer hollow container according to Claim 7, wherein the recycled resin contains at most 10 wt.% thereof of the polyglycolic acid resin.
9. A multilayer hollow container according to any one of Claims 1 - 8,
25 wherein the polyglycolic acid resin has thermal properties including: a Tg (glass transition temperature) of 30 - 55 °C, a Tc1 (crystallization temperature on temperature increase) of 60 - 135 °C, a Tc2

(crystallization temperature on temperature decrease) of 140 - 200 °C, and a T_m (melting point) of 150 - 230 °C.

10. A process for producing a gas-barrier multilayer hollow container,
5 comprising the steps of: heat-forming a hollow laminate reform having a layer structure including a layer of a polyglycolic acid resin comprising at least 60 wt.% of recurring unit represented by a formula of $-(O\cdot CH_2\cdot CO)-\cdots(1)$, and a layer of co-laminated resin comprising an aromatic polyester resin or an aliphatic polyester resin other than
10 polyglycolic acid resin and having a glass-transition point of at least 70 °C laminated on at least one surface of the polyglycolic acid resin layer; cooling the preform; re-heating the preform; and co-stretching the preform.
- 15 11. A production process according to Claim 10, wherein the hollow laminate preform is formed by co-injection.
12. A production process according to Claim 10 or 11, wherein the laminate preform after heating is re-heated to a temperature of at most
20 90 °C by heating it for 30 - 110 sec. by an infrared heater.
13. A production process according to any of Claims 10 - 12, wherein the re-heated laminate preform is set in a mold and subjected to blow co-stretching at ratios of longitudinally 1.5 - 4.0 times and transversely
25 3.0 - 9.0 times.
14. A production process according to any of Claims 10 - 13, wherein

a container after the co-stretching is heat-set by holding it in a heated mold at 70 - 160 °C for 1 - 10 sec.